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The Use of Discovery Method to Improve Students' Learning Activities and Outcome in Learning Mathematics at Grade V in Public Elementary School 08 Nan Limo Mudik, Palupuh District, Agam Regency

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Abstract: The research conducted based on the students' learning activities and outcome in learning math about finding the area of the plane at grade V in Public Elementary School 08 Nan Limo Mudik, Palupuh District, Agam Regency was still low. After doing observation, it turned out that the teaching-learning process was less interesting and the use of media was less appropriate so that students' ability to do problem solving, to convey the ideas, and to find by themselves the formula of the area of plane was low. Therefore, this research used discovery method conducted in the first semester, 2016/2017 academic year. This research consisted of two cycles. Every cycle consisted of four stages that are planning, implementing, observation, analysis, and reflection. The result of the research showed that by using discovery methods, there was the increase in students' learning activities and outcome at grade V in Public Elementary School 08 Nan Limo Mudik. For the students' learning activities, there was the increase from 70,38 in the first cycle to 83,75 in the second cycle. Based on that mark, the average mark of students' learning activities was in very good qualification. The percentage of the students' learning outcome also increased from 45 % by the average 71,10 in the first cycle to 95% by the average 84,65 in the second cycle. Thus, it can be concluded that the use of discovery method can increase students' learning activities and outcome in learning math at at grade V in Public Elementary School 08 Nan Limo Mudik. In accordance with qualitative, the teaching-learning process using discovery method can increase students' learning activities and outcome in learning math about finding the area of the plane. To summarize, the use of the discovery method succeeded to increase students' learning activities and outcome exceeding the KKM. Therefore, the research can be closed.

Keywords: Discovery method, learning activity, and learning outcome.

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Introduction

This Research began with the condition on the field that students' learning outcome on mathematics subject was low. It was because the teachers still used the conventional approach in teaching math so that students had not been able to find by themselves the formula of the area of plane. The conventional approach had not been able to develop students' cognitive, affective, and psychomotor abilities as outlined in the 2006 Curriculum. Thus, the students only tended to memorize mathematical concepts they learned without comprehension. In addition, teachers as informants tended to dominate learning activities in the classroom so there was no reciprocal relationship between teachers and students that had implications for the quality of learning in math teaching-learning process.

Its effects on the students can be acknowledged from the students' math ability at grade V in Public elementary school 08 Nan Limo Mudik still had not reached the expected result, and during the learning process it was seen that (1) the students were less concentrated when the teacher gave the direction so that students also found difficulties in formulating the conclusion (2) students were less able to answer questions from teachers, and felt ashamed to ask questions either to the teacher or to his friends. (3) students were less active in asking questions when the teacher gave the opportunity to ask, (4) students were less serious in doing exercises, so almost all the answers were not correct (5) students often did not do homework. (6) students often did not jot down the conclusions of the lesson that had been studied. This problem, of course, would cause bad effect towards students' ability in learning math, such as they had low ability in problem solving, conveying the ideas and so on.

The difficulties that experienced by the students could be seen from students' assignment and the daily test at grade V Public Elementary school 08 Nan Limo Mudik about counting the area of trapezium and kite. Based on the result of the daily test, from 28 students, only 10 students who could pass the KKM (70). It means that only 35,71% of the students could pass the KKM.

To overcome the problems above, the teachers are expected to be able to choose the right teaching. It is in line with Syaiful (2005: 82) "one of the efforts that teachers never ignore is how to understand the position of the method as one of the components that also take part in the success of teaching and learning". In addition, mistakes in choosing learning methods will hinder the achievement of learning objectives. As what Syaiful (2005: 185) stated, "Because of the large number of subjects so that the objectives for each subject are also different. This allows a teacher to be able to choose a right method to achieve the objectives. It is not allowed for the teachers to pick up the method randomly. It should be based on the learning objectives."

There are many learning methods that teachers can use in presenting the lesson. One of them is the discovery method. The use of discovery methods in learning aims to make students more active to investigate and the lessons learned by students are stuck longer in their memories. In addition, by doing discovery, students have learned to master one of the scientific methods. According to Mulyasa (2005: 110), "the discovery method is a method that emphasizes more direct experience and learning by discovery method prioritizes the process than learning outcomes". According to Suryosubroto (2002: 191) that, "One recent method of teaching used only in advanced schools is discovery methods. This is due to discovery method is : (1) It is a way of developing student to learn actively (2) By self-discovery, self-investigation then the results obtained will stick longer in their mind (3) Self-discovery is a well-controlled and easy to be used or transferred in other situations (4)) Using the discovery strategy, students learn to master one of the scientific methods that will be developed by themselves (5) With this method of discovery also students learn to think analysis and try to solve problems faced by themselves, this habit will be transferred in the life of society.

According to Mujiati (2016: 183) "The benefits of learning are based on the findings, namely (1) the participants are active in learning activities, because they think and use the ability to find the final result; (2) the participants are aware of the realm of learning, because they themselves are in the process to find it.; (3) finds that it causes a sense of satisfaction. Satisfaction of individuals is encouraged to seek the discovery of longer-than-guaranteed learning, (4) the students who obtain knowledge with their inventory have ability to transfers their knowledge other context. and (5) this method trains the students to learn more by themselves"

Students' activities are very necessary in learning, because learning means doing or doing activities. Activity is a principle or principle that is very important in the interaction of the learning process. In other

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words learning is emphasized or oriented to the students' activities. Piaget in Sardiman (2009: 100) states that "A student thinks as long as he does, without doing the students will not think". The process of learning activity must involve all aspects of psychophysical students both physically and spiritually, so that the acceleration of behavioral changes can occur quickly, precisely, easily, and correctly, both related to cognitive, affective, and psychomotor aspects (Grandson, 2014: 21).

According to Vienna Sanjaya (2006: 133), activity-based learning of students is considered an approach in learning that emphasizes the student's activities optimally to obtain learning outcomes in the form of a combination of cognitive, affective, and psychomotor aspects in balance. Students' activities in the learning process should be undertaken and developed by the teacher for all subjects including mathematics subjects. This can be done on Basic Competencies calculating the area of trapezoid and kite, as well as solving problems related to the plane. By using LKS students are guided to find by themselves the formula of the area of trapezium and kite. Thus it is expected that the students can follow the learning actively so that they no longer feel the difficulty in formulating conclusions, do not feel shy to ask questions and answer questions asked by teachers or friends, and no more students who do not do the exercises or homework given teachers.

Based on the backgrounds mentioned above, then the problem can be formulated as follows: (1) How can the use of discovery method increase students' mathematics learning activities at grade V in Public Elementary School 08 Nan Limo Mudik Palupuh Disctric, Agam regency? (2) How can the use of discovery method improve students' mathematics learning outcome at grade V in Public Elementary School 08 Nan Limo Mudik Palupuh District, Agam Regency?

Method

The research was conducted by using Classroom Action Research (CAR) with qualitative and quantitative approach. The research was conducted in two cycles and every cycle consisted of two meetings.

The research was conducted at grade V in Public elementary school 08 Nan Limo Mudik, Palupuh District, Agam Regency in even semester 2016/2017 academic year. The subjects of the research were the teacher and the students. The stages in doing the research consist of: planning, implementing, observation, and reflection. (Suharsimi: 2007)the source of the data were teacher and students.

The data being analyzed in this research were the data of observation result and the data of students' test result in learning about counting the area of trapezium and kite, and solving the problems related to the area of plane. Data analyzing was done toward the data that had been reduced that were the data of learning implementation, evaluation, or students' learning outcome. Data analyzing was done separately so that the researcher could find out the information about which one that supported the learning and which one that hampered the learning. Thus, the improvement and the development for the deficiency can be done exactly toward the related aspect.

Data about students' learning activities and the test result of students' learning outcome was counted by using the following formula:

$P = F/N \times 100\%$

Where:

P = percentage

F= frequency of correct answer or activity

N = the amount of the question or the amount of the individual

According to Aderusliana (2009:6), the interpretastion of learning aktivities and learning outcome can be classified as follow:

80% - 100% = very good

70% - 79% = good

60% - 69% = enough

< 59% = less

Results and Discussion

After doing data analysis about the learning implementation using discovery method about finding the area of plane towards grade V students in Public elementary school 08 Nan Limo Mudik, Palupuh District, Agam Regency, there was the increase of students' learning activities and learning outcome.

In the first cycle, teacher's activities in the first meeting hadn't been conducted maximally as what had been planned before. The teacher had done the teaching process based on the lesson plan, but not all of the steps in doing discovery methods hadn't been completed well. Before the teacher started the lesson in the first meeting, the teacher prepared the media that would be used and LKS. In the first meeting, the media used were a picture of a house and trapezium.

The learning activities hadn't run as well as the plan. There were many deficiencies done by the teacher while learning process. Some of the deficiencies were the teacher hadn't been able to make the students comprehend about the lesson that they would learn and the teacher also hadn't been able to benefit the time well so that all the teaching-learning steps that had been planned couldn't be conducted appropriate with the time allocation. It happened because the teacher must guide the students to do the activity based on the phases of the discovery method. When the students were supposed to do discussion, there were some students who were not serious doing group task and only relied on the smartest to finish the LKS. In other group, there was a student who liked to bother his friends who were working on LKS. The teacher admonished and directed the students to actively be involved in group work. According to the steps in LKS, students told each other about how to find the formula of trapezium.

The first things that the students done were to measure the height of trapezium, then measure the middle of the height of the trapezium and then name each area of trapezium as area I, II, III, IV. After that, the students cut the trapezium based on the named area so that all of the four areas were separated. Then, the four areas were arranged to be rectangle. Based on the rectangles and comparing them to the trapezium, students could find the formula of the area of trapezium.

In the first place, the students had difficulties to find out the formula of the area of trapezium. Then, the teacher guided the students by giving some questions that led the students until finally the students could explain it well although there were some groups hadn't been active in learning process yet. The teacher gave guidance until they could finish LKS and found out the formula of the area of trapezium. Finally the students found out the formula of the area of trapezium by comparing the area of rectangle to the area of trapezium, the area of trapezium = the area of rectangle. The formula of the area of rectangle = length x width. The length on rectangle is same with shape a + shape b on trapezium. While the width on rectangle = ½ t. The formula of the area of trapezium = a + b x ½ t or(a + b)t2

Teacher's activities in the second meeting of the first cycle hadn't been conducted maximally as plan, but there were some improvements in some activities and describing the lesson. The teacher had conducted the teaching-learning process based on the lesson plan, but there were some steps in discovery methods hadn't been conducted well. Like in the first meeting, before starting the lesson, the teacher prepared the media that would be used and LKS. In the second meeting, the media used was a picture of kite.

Students' activities in the second meeting showed that the involvement of the students following the learning process that used discovery stages had been increased. The students were so enthusiastic in taking part in learning process, listening to the teacher's explanation, and asking-answering questions with the teacher related to the lesson about finding the formula of the area of kite. It can be seen that all of the group could find the formula of the area of kite that was by comparing the area of rectanglewith the area of kite. The area of rectangle is same with the area of kite. The formula of the area of rectangle = length x width. The length on rectangle = diagonal 1 on kite, while the width on rectangle = ½ x diagonal 2 on kite, so the formula of the area of kite is d1 x 1/2 d2 ord1 x d22

In the second cycle, the learning process ran well as what had been planned. It could be seen from the teacher's activities and students' activities. In the second cycle, teacher had been able to motivate students

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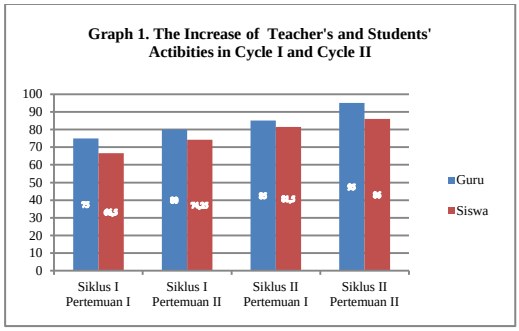
to learn. The teacher always gave the guidance while students were doing group work. There were no more students afraid to ask questions to the teacher and in group work, they could cooperate well with the others.

Based on the explanation above, it could be acknowledged that teacher's activities and students' activities in learning process using discovery method in every meeting in the second cycle increased in which in the second cycle, teacher's and students' activities had been conducted appropriate with the plan.

Based on the analysis of the activities result, it could be concluded that positive activities in using discovery method in learning math had increased if compared with the learning process without using discovery method. Students' negative activities such as passive and do not care towards the learning process had decreased significantly.

Based on the result of observation, it could be said that there had been improvement on students' learning. Students could think critically, actively and creatively. They had also high curiosity toward the lesson and had good problem solving ability so that learning math using discovery method was meaningful and the students could remember it for long time. It goes along with what had been said by Suryosubroto (2002:191).

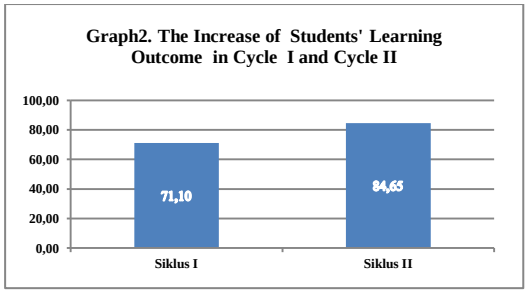
The increase of teacher's and students' activities in every meeting in every cycle can be seen on the following graph.



According to the result, teacher's and students' activities in cycle 1 and cycle II had reached the success more than 80%. Teacher's activity in learning process in cycle I in the first meeting was 75 % and the second meeting was 80%. While the students' activities in the first meeting is 66,50 and in the second meeting was 74,25.

In the second cycle, teacher's and students' activities increased. The percentage of teacher's activities in the first meeting was 85 % and the second meeting was 95 %. While for students' activities, in the first meeting, it was 81,50% and the second meeting, it was 86 %.

The increase of teacher's and students' activities also had effect on the students' achievement in every cycle. The increase of students' learning outcome can be seen on the following graph:



Through the phases on discovery method, teacher raised students' learning motivation from the beginning by using media such as realia or pictures and asking-answering questions related to those media. It goes along with

Hamzah B. Uno's dan Nurdin Mohamad's opinion (2012: 35) that one way to provoke students' motivation in learning is by giving stimulus through questions and using the media that will attract students' attention.

Then, Hamzah B. Uno (2013: 34-37) stated that one technique that can be used by the teachers in learning process to improve students' activities is by involving the students in learning. It was also applied in learning math where the students were involved in every phase: formulating the problem, making hypothesis, finding information, data, and fact that were needed to test the hypothesis, generalization, and applying the generalization towards new situation

Based on the result of the research, it can be stated that discovery method in this research ran well in in Public elementary school 08 Nan Limo Mudik, Palupuh District because the teacher was actively involved in guiding and directing the students in every phase in discovery method. It could be seen for the result of the evaluation in cycle I, from 20 students, only 9 students who could pass the learning with percentage 45% (average mark: 71,10). The lowest was 47 and the highest was 93. In the cycle II, the percentage of the completeness of the learning outcome increased becoming 95 % with average mark was 84,65. From 20 students, 19 could pass with the lowest was 60 and the highest was 100.

Thus, it can be concluded that the use of discovery method can increase students' learning activities and learning outcome at grade V in Public elementary school 08 Nan Limo Mudik.

Conclusion

Based on the result of the research and the discussion, it can be concluded that applying discovery method in learning can increase students' learning activities and learning outcome at grade V in Public elementary school 08 Nan Limo Mudik, Palupuh District, Agam Regency. That can be acknowledged from the amount of the students who can reach KKM 70 increased from the result of evaluation of cycle I and cycle II.

Suggestions that the researcher can give from this research are as follow:(1) teachers can use the discovery method in teaching math at school so that the teachers can design the learning process based on the stages on discovery method as effective as possible; (2) the headmaster needs to notice the facility so that the learning process using discovery method can be conducted maximally; (3) Supervisor can give some suggestions or guidance towards the teacher in applying discovery method in learning math.; (3) Education authorities need to give chances to the teacher to follow the training on how to choose the perfect method to improve teachers' professionalism.

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